

AMENDMENTS TO THE CLAIMS

1. (ORIGINAL) A method for improving the performance of a swim fin, comprising:

- (a) providing a foot attachment member having a toe portion;
- (b) providing a blade member connected to said foot attachment member and forming a forward extension of said foot attachment member, said blade member having opposing surfaces, outer side edges, a root portion adjacent said toe portion of said foot attachment member and a free end portion spaced from said root portion and said foot attachment member, said blade member having predetermined length between said root portion and said free end portion, said blade member having a longitudinal midpoint between said root portion and said free end portion, said blade member having a first half portion between said root portion and said longitudinal midpoint and a second half portion between said longitudinal midpoint and said free end portion;
- (c) providing said blade member with sufficient root portion flexibility adjacent said root portion to permit a root pivotal node to form during use within said blade member adjacent said root portion, said root portion flexibility being arranged to permit said first half of said blade member to experience a first half deflection of at least 10 degrees during a relatively light kicking stroke such as used to reach a relatively relaxed cruising speed.
- (d) providing said blade member with sufficient midpoint flexibility adjacent to said longitudinal midpoint to permit a midpoint bending node to form during an inversion portion of said relatively light kicking stroke within said blade member adjacent longitudinal midpoint, said midpoint bending node forming a second half deflection adjacent to said second half of said blade member during said inversion portion of said relatively light kicking stroke, said first half deflection and said second half deflection forming an S-shaped wave along said predetermined length of said swim fin during said inversion portion.

2. (CURRENTLY AMENDED) A method for providing a swim fin, comprising:

- (a) providing a foot attachment member having a toe portion;

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(b) providing said ~~a blade member with at least one extensible load bearing member~~ having a root portion near said foot attachment member and a free end portion spaced from said root portion and said foot attachment member, said blade member having a longitudinal midpoint midway between said root portion and said free end portion and said blade member having a first half portion between said root portion and said midpoint, said blade member having at least one load bearing member arranged to provide a major portion of structural support for said blade member, said at least one load bearing member having sufficient extensibility flexibility to permit said blade member to flex around a transverse axis to a lengthwise reduced angle of attack that permits said blade member to experience a deflection of at least 10 degrees from a neutral position to a deflected position under relatively light load conditions such as created during a relatively light kicking stroke used to achieve a relatively slow swimming speed, a major portion of said deflection occurring along said first half portion of said blade member, said at least one load bearing member having at least one compression surface portion that is within said first half portion, said at least one compression surface portion of said at least one load bearing member being able to experience a longitudinal extension of at least 3% a compression over a longitudinal compression range of at least 2% during said deflection, said at least one load bearing member having a transverse dimension sufficient to substantially prevent said ~~rib member~~ at least one load bearing member from collapsing during said deflection, said ~~tension~~ at least one compression surface portion being made with a resilient material capable of recovering from said ~~extension~~ compression over said ~~elongation~~ longitudinal compression range and snapping said blade member back ~~to~~ toward said neutral position at the end of a stroke.

3. (NEW) The method of Claim 2 wherein at least one portion of said at least one load bearing member is made with a thermoplastic material having a Shore A hardness that is between 40 and 85 durometer.

4. (NEW) The method of Claim 2 wherein said at least one tension surface of said at least one load bearing member is made with a thermoplastic material having a Shore A hardness that is between 40 and 85 durometer.

5. (NEW) The method of Claim 2 wherein said at least one load bearing member has a predetermined vertical dimension along said first half portion of said blade member, at least one portion of said at least one load bearing member being made with a thermoplastic material having a Shore A hardness that is higher than 85 durometer.

6. (NEW) The method of Claim 5 when said predetermined vertical dimension is substantially small.

7. (NEW) The method of Claim 2 wherein said at least one load bearing member has a predetermined amount of taper between said root portion and said free end portion of said blade member, said predetermined amount of taper being sufficiently small to permit a major portion of said deflection to occur within said first half portion of said blade member.

8. (NEW) The method of Claim 2 wherein said at least one load bearing member has at least one tension surface portion made with a substantially elastic thermoplastic material that is arranged to experience longitudinal elongation during said deflection, said elastic thermoplastic material being arranged to build up stored energy during said longitudinal elongation and then release said stored energy with an elastic recovery at the end of a stroke in an amount effective to significantly increase said snapping of said blade member back toward said neutral position at the end of a stroke.

9. (NEW) The method of Claim 2 wherein said swim fin is kicked with repetitive reciprocating kicking cycles that have two opposing stroke directions, said relatively light kicking stroke used to create said deflection occurring in at least one of said two opposing stroke directions, and said deflection being measured at a tangent to said midpoint of said blade member.

10. (NEW) The method of Claim 9 wherein said deflection is not less than 15 degrees during said at least one of said two opposing stroke directions.

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11. (NEW) The method of Claim 9 wherein said deflection is not less than 20 degrees during said at least one of said two opposing stroke directions.

12. (NEW) The method of Claim 9 wherein said deflection is not less than 30 degrees during said at least one of said two opposing stroke directions.

13. (NEW) The method of Claim 9 wherein said deflection is not less than 40 degrees during said at least one of said two opposing stroke directions.

14. (NEW) The method of Claim 9 wherein said deflection is not less than 50 degrees during said at least one of said two opposing stroke directions.

15. (NEW) The method of Claim 10 wherein said longitudinal compression range is not less than 5%.

16. (NEW) The method of Claim 11 wherein said longitudinal compression range is not less than 5%.

17. (NEW) The method of Claim 12 wherein said longitudinal compression range is not less than 5%.

18. (NEW) The method of Claim 2 wherein said longitudinal compression range is not less than 5%.

19. (NEW) The method of Claim 9 wherein said repetitive reciprocating kicking cycles are created with significantly low levels of muscle strain, said at least one load bearing member is arranged to form a longitudinally undulating S-shaped wave during at least one inversion portion of said repetitive reciprocating kicking cycles, the presence of said S-shaped wave being sufficient to create a significant increase in swimming speed.

20. (NEW) The method of Claim 15 wherein said repetitive reciprocating kicking cycles are created with significantly low levels of muscle strain, said at least one load bearing member is arranged to form a longitudinally undulating S-shaped wave during at least one

inversion portion of said repetitive reciprocating kicking cycles, the presence of said S-shaped wave being sufficient to create a significant increase in swimming speed.

21. (NEW) The method of Claim 20 wherein said longitudinally undulating S-shaped wave is arranged to form a longitudinal S-shaped standing wave when said repetitive reciprocating kicking stroke cycles occur at a relatively high kicking frequency.

22. (NEW) The method of Claim 20 wherein said longitudinally undulating S-shaped wave is arranged to form a longitudinal S-shaped standing wave when said repetitive reciprocating kicking stroke cycles occur at a relatively high kicking frequency.

23. (NEW) The method of Claim 22 wherein said free end portion experiences a predetermined free end oscillation during use and said longitudinal S-shaped standing wave is sufficient to create an increase in the amplitude of said predetermined free end oscillation.

24. (NEW) The method of Claim 22 wherein longitudinal S-shaped standing wave is sufficient to create a significant increase in swimming speed.

25. (NEW) The method of Claim 2 wherein said at least one load bearing member made is made with at least one elastic thermoplastic material that is arranged to permit said blade member to experience substantially similar deflection angles on both relatively light kicking strokes and relatively hard kicking strokes.

26. (NEW) The method of Claim 1 wherein said S-shaped wave is sufficient to create a significant reduction in the kicking effort required to reach a predetermined swimming speed.

27. (NEW) The method of Claim 1 wherein said S-shaped wave is sufficient to create a significantly increase in swimming speed.

28. (NEW) The method of Claim 1 wherein said deflection is not less than 15 degrees.

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29. (NEW) The method of Claim 1 wherein said deflection is not less than 20 degrees.

30. (NEW) The method of Claim 1 wherein said deflection is not less than 25 degrees.

31. (NEW) The method of Claim 1 wherein said deflection is not less than 30 degrees.

32. (NEW) The method of Claim 1 wherein said deflection is not less than 40 degrees.

33. (NEW) The method of Claim 1 wherein said deflection is not less than 50 degrees.

34. (NEW) The method of Claim 1 wherein said blade member has a load bearing member having a compression surface that is arranged to experience a longitudinal compression range of at least 2% during said deflection.

35. (NEW) The method of Claim 34 wherein said longitudinal compression range is not less than 5%.

36. (NEW) The method of Claim 28 wherein said blade member has a load bearing member having a compression surface that is arranged to experience a longitudinal compression range of at least 2% during said deflection.

37. (NEW) The method of Claim 36 wherein said longitudinal compression range is not less than 5%.

38. (NEW) The method of Claim 29 wherein said blade member has a load bearing member having a compression surface that is arranged to experience a longitudinal compression range of at least 2% during said deflection.

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39. (NEW) The method of Claim 38 wherein said longitudinal compression range is not less than 5%.

40. (NEW) The method of Claim 31 wherein said blade member has a load bearing member having a compression surface that is arranged to experience a longitudinal compression range of at least 2% during said deflection.

41. (NEW) The method of Claim 40 wherein said longitudinal compression range is not less than 5%.

42. (NEW) The method of Claim 1 wherein said blade member has at least one elongated load bearing member made with at least one elastic thermoplastic material that is arranged to permit said blade member to experience substantially similar deflection angles on both relatively light kicking strokes and relatively hard kicking strokes.